

**PECAN CREEK, GAINESVILLE, TEXAS  
DETAILED PROJECT REPORT  
and  
INTEGRATED ENVIRONMENTAL ASSESSMENT**

**APPENDIX C.3  
CIVIL ENGINEERING**

**Existing Condition.** Pecan Creek begins in the northern portion of Cooke County and extends downstream through the center of the City of Gainesville and draining into the Elm Fork Trinity River. Flooding problems occur along Pecan Creek within the city limits because the creek's capacity has been exceeded, exceeded causing flooding on the overbanks. The channel was lined with concrete rip rap between Garnett and Scott Streets, and in 1993, improvements were made to the channel lining between Main Street and Broadway Street. Downstream of Garnett Street, meanders within the channel were realigned to improve its capacity. The remainder of the creek through the city is a natural-lined channel. Even with these improvements, the channel cannot contain the 100-year flood.

**Description of Structures.** The channel improvements shall consist of grass-lined cross-sections with 1 Vertical on 3.5 Horizontal side slopes, and a channel bottom width of 30 feet. Rock rip rap shall be placed at the upstream end of the project as a transition between existing conditions and the improved channel.

**Design Criteria References.** Design assumptions and other criteria were based on applicable parts of the following references unless otherwise noted.

- 1 Engineering and Design; Guidelines for Landscape Planting at Floodwalls, Levees, and Embankment Dams, EM 1110-2-301, 31 March 1993.
- 2 Engineering and Design; Environmental Engineering and Local Flood Control Channels, EM 1110-2-1205, 30 June 1992.
- 3 Engineering and Design; Engineering and Design for Civil Works Projects, ER 1110-2-1150, 31 August 1999.
- 4 Engineering and Design; Channel Stability Assessment for Flood Control Projects, EM 1110-2-1418, 31 October 1994.
- 5 Engineering and Design; Structural Design of Concrete Lined Flood Control Channels, EM 1110-2-2007, 30 April 1995
- 6 Criteria for Construction Within the Limits of Existing Federal Flood Protection Projects, SWFP 1150-2-1

**Design Data Criteria and Assumptions.** The recommended plan for the Pecan Creek channel improvement project consists of 1.34 miles of grass-lined trapezoidal channel with a

30-foot bottom width, and 1 vertical on 3.5 horizontal side slopes. Channel improvements begin 200 feet upstream of Moss Street at Station 10+00 and ends 1060 feet upstream of Belcher Street at Station 88+59. New bridges will be required at six street crossings; namely Garnett, Main, Broadway, California, Scott, and Belcher Streets. The proposed channel alignment considers minimizing impacts to residential and commercial property, environmental damage, and utility relocations. Areas along the channel will be reshaped with the intent of preserving the channel's natural meanders in order to carry low flows and preserve the environmental quality within the creek banks. Surface runoff will be allowed to naturally flow over the creek banks, or natural-lined ditches will be utilized on the overbanks to collect runoff and discharge flows to natural low-lying areas along the creek. The recommended plan calls for the disturbance of approximately 18 acres. The proposed plan and profile of the Pecan Creek channel improvement project are illustrated on plates C101 to C106.

**Relocations.** The channel improvements will require the construction of six new bridges. See Appendix C.4 “Structural Engineering” for description and bridge details.

**Utilities.** Approximately 720 feet of water lines, 1,490 feet of sanitary sewer lines, 900 feet of gas lines, telephone lines, and electric lines will be affected by the channel improvements. Such utilities shall have to be removed and replaced out of the new channel cross-sectional area.

**Waste Disposal Sites.** The city of Gainesville has tentatively identified two disposal sites in the vicinity of the Pecan Creek channel improvement project. Both sites were once used as landfill sites by the city of Gainesville. The first site is located 5.5 miles southeast of the project area along FM Road 902. It has an abandoned gravel pit which can be used as a disposal site. The second site is located 4 miles also southeast of the project site, and can be accessed from FM Road 902 then along county roads that lead to an area adjacent to Wheeler Creek. No problem is anticipated in acquiring disposal areas.

Approximately 725 cubic yards of overburden channel excavation will be used for compacted fill in areas where the channel will be reshaped. All other excavation, including stripping, will be wasted. The anticipated disposal volumes are 118,030 cubic yards of overburden material, 6,250 cubic yards of rock material, and 1,425 cubic yards of reinforced concrete that was used to line the channel.

**Operation and Maintenance.** Operation and maintenance of the completed project will include the periodic clean-out of the channel, especially at the bridges, mowing, and repairing damage to the side slopes and the bottom of the channel after significant flood events.

**LIST OF PLATES**

Sheet No.

C001	Project Location, Vicinity Map, and Index
C101	Plan and Profile (Station 10+00 to Station 23+00)
C102	Plan and Profile (Station 23+00 to Station 36+00)
C103	Plan and Profile (Station 36+00 to Station 51+00)
C104	Plan and Profile (Station 51+00 to Station 65+00)
C105	Plan and Profile (Station 65+00 to Station 80+00)
C106	Plan and Profile (Station 80+00 to Station 88+59.6)
C301	Typical Channel Sections

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